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EXAMINER	
VLAHOS, SOPHIA	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/616,796	GIBSON ET AL.	
	Examiner	Art Unit	
	SOPHIA VLAHOS	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 January 2010_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-8,11-16,18,19,21-23,26-31,33-36,38-40,42-53,57 and 59-65_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-8,11-16,18,19,21-23,26-31,33-36,38-40,42-53,57 and 59_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _7/10/03_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _1/13/2010_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/13/2010 has been entered.

Response to Arguments

2. Applicant's arguments (1/13/2010) with respect to the rejection of independent claims 1, 18, 29, 34, 43, 46, 53, 57 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-8, 18-19, 21-23, 34-36, 42-43, 46-49, 52-53, 57, 60-63, 65 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al. (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 200 and Whikehart et al. (U.S.7,200,377).

With respect to claim 1, Kaminski et al. discloses: a front end circuit operable to receive a plurality of radio signals (Fig. 4, front end circuit comprises the blocks to the left of the "A/D" block 24, each of the antennas capture radio signals in one of the frequency bands including: Cellular DIV 0, Cellular DIV 1, PSC, FM- band, column 10, lines 49-67), transmitted across a frequency band (Fig. 4, shaded portions on the frequency spectrum on the right side show the frequency band(s) captured by receiving antennas), by utilizing a plurality of modulation formats and which correspond to a plurality of radio channels and functions (column 10, lines 61-64, channels on PCS band, column 1, lines 32-37, modulation formats used by the channels inside the PCS band), and operable to generate an analog signal simultaneously carrying a plurality of channels within said frequency band (column 10, lines 64-65, the signal includes received channels in the PCS frequency band), said front-end circuit comprising an intermediate frequency mixing circuit operable to translate the received radio signals to an intermediate frequency band (Fig. 4, function of frequency conversion stage 20d, column 11, lines 25-29); an analog to digital converter coupled to said front-end circuit, said analog to digital converter operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band (Fig. 4, "A/D" converter block 24, column 11, lines 54-56); and a digital processing system coupled to said analog to digital

converter, said digital processing system operable to receive said digital signal and substantially simultaneously generate from said digital signal a plurality of output signals corresponding to a plurality of channels within said frequency band (Fig. 4, function of block 26 “processing”, column 5, lines 19-32) .

Kaminski et al. do not expressly teach: by utilizing a plurality of aviation specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions, and substantially simultaneously generate from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of channels within said frequency band; wherein the aviation-specific output signals comprise navigation signals, communication signals, automatic direction finder signals, and glide slope signals.

In the same field of endeavor (wireless communications), Rogers discloses: by utilizing a plurality of aviation specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions (column 3, lines, 25-57, see NAV/COM aircraft band signals, and allocation of channels, and it is understood that the NAV/COM signals have specific modulation formats).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Rogers. so that it processes aviation type signals (NAV/COM) that are used by commercial aircrafts using a single A/D converter (Kaminski et al.

column 12, lines 55-58, and the NAV/COM signals are of importance to aircrafts military and commercial, and increase the versatility of the receiver of Kaminski, without increasing hardware cost (the receiver of Kaminski uses a single A/D) column 3, lines 13-16)).

In the same field of endeavor, Oczak disclose: wherein aviation-specific output signals comprise communication signals, navigation signals, automatic direction finder signals, and glide slope signals (slides 3 communication signals, slide 8 listing navigation signals including ADF (automatic direction finder, slide 11) and GS (glide slope, slide 14)).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski and Rogers based on Oczak so that signals used by aircrafts are output by the multi-band receiver of Kaminski.

In the same field of endeavor (multi-channel wireless receiver), Whikehart et al. discloses: substantially simultaneously generate from said digital signal a plurality of output signals corresponding to a plurality of channels within said frequency band (column 1, lines 43-46, column 2, lines 46-61, simultaneous output signals out of digital signal processor 20 of Fig. 1).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Whikehart so multiple users or multiple devices receive a plurality of

output signals corresponding to a plurality of channels within said frequency band (Whikehart et al. column 2, lines 56-61).

Claim 60 is rejected based on a rationale similar to the on used to reject claim 1 above.

With respect to claim 4, the combination of Kaminski et al., Rogers, and Whikehart et al. further discloses: wherein said digital processing system generates a plurality of output signals comprising a plurality of signals for transmission to a plurality of end devices (Whikehart et al., column 2, lines 56-61).

With respect to claim 5, Kaminski et al., disclose: wherein said front-end circuit comprises an antenna circuit operable to receive said radio signals (Fig. 4, see antenna 12c).

With respect to claim 6, Kaminski et al., disclose: wherein said front-end circuit further comprises an amplifier circuit operable to amplify said received radio signals (column 5, lines 37-46, LNAs are associated with each receiving antenna).

With respect to claims 7, 8 Kaminski et al., disclose: wherein said front-end circuit further comprises a filter circuit operable to filter said received radio

signals (Fig. 4, filters 36x, bandpass filters, column 6, lines 27-30, column 9, lines 11, 19, 27).

With respect to claims 18-19, claims 18-19, are rejected based on a rationale similar to the one used to reject claim 1 above, and see that Kaminski discloses: at least one front-end circuit group comprising a plurality of front-end circuits (Fig. 4, one front-end circuit group comprises the front-end circuits of the PCS and FM-radio receiving channels). With respect to the limitation said digital processor operable to extract information from at least one of said channels and generate said at least one output, this limitation is disclosed by Whikehart et al. (column 2, lines 56-61, audio or data are extracted from the channels, and are output).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Whikehart so multiple users or multiple devices receive a plurality of audio or data (Whikehart et al. column 2, lines 56-61).

Claims 21-23 are rejected based on a rationale similar to the one used to reject claims 5-7 above.

With respect to claim 34, Kaminski et al., disclose: providing a radio receiver comprising: one or more front-end circuits (Fig. 4, see at least two front-

end circuits for PCD band and FM-radio signal reception), wherein at least one of said front-end circuit comprises an intermediate frequency mixing circuit (Fig. 4, mixers 38x inside frequency translating blocks 20x, column 11, lines 25-29) ; one or more analog to digital converters coupled to said one or more front-end circuits (Fig. 4, A/D 24, coupled to front-end circuit); and a digital processing system coupled to said one or more analog to digital converters (Fig. 4, block 26 "processing"), said digital processing system comprising :a digital down converter (part of DSP and therefore coupled to it, see column 5, lines 21-33); and a digital signal processor coupled to said digital down converter (DSP mentioned above, the tuning to respective frequencies); receiving at a plurality of the one or more front-end circuits a plurality of radio signals transmitted across a frequency band (Fig. 4, antennas 12c, 12d capture signals inside PCS and FM which are different radio bands) , wherein said radio signals received by any one of said front-end circuits are within a different frequency band than said radio signals received by the other of said front-end circuits (PCS and FM radio band); generating an analog signal from said received radio signals, said analog signal simultaneously carrying a plurality of channels within said frequency band (Fig. 4, function of "block 14, column 4, lines 50-54); translating said analog signal to an intermediate frequency band (Fig. 4, function of the frequency converter blocks 20x) converting said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band to thereby digitize said plurality of channels within said frequency band (Fig. 4, A/D" block 24, column 11, lines 54-56); and generating a plurality of output signals corresponding to a plurality of

said digitized channels within said frequency band (Fig. 4, processing block 26. column 5, lines 21-31).

Kaminski et al. do not expressly teach: by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions; substantially simultaneously generating from said digital signal a plurality of aviation-specific output signals corresponding to a plurality of said digitized channels within said frequency bands, the aviation-specific output signals comprising navigation signals, communication signals, automatic direction finder signals, and glide slope signals.

In the same field of endeavor (wireless communications), Rogers discloses: by utilizing a plurality of aviation specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions (column 3, lines, 25-57, see NAV/COM aircraft band signals, and allocation of channels, and it is understood that the NAV/COM signals have specific modulation formats).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Rogers. so that it processes aviation type signals (NAV/COM) that are used by commercial aircrafts using a single A/D converter (Kaminski et al. column 12, lines 55-58, and the NAV/COM signals are of importance to aircrafts military and commercial, and increase the versatility of the receiver of Kaminski,

without increasing hardware cost (the receiver of Kaminski uses a single A/D) column 3, lines 13-16)).

In the same field of endeavor, Oczak disclose: wherein aviation-specific output signals comprise communication signals, navigation signals, automatic direction finder signals, and glide slope signals (slides 3 communication signals, slide 8 listing navigation signals including ADF (automatic direction finder, slide 11) and GS (glide slope, slide 14)).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski and Rogers based on Oczak so that signals used by aircrafts are output by the multi-band receiver of Kaminski.

In the same field of endeavor (multi-channel wireless receiver), Whikehart et al. discloses: substantially simultaneously generate from said digital signal a plurality of output signals corresponding to a plurality of channels within said frequency band (column 1, lines 43-46, column 2, lines 46-61, simultaneous output signals out of digital signal processor 20 of Fig. 1).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Whikehart so multiple users or multiple devices receive a plurality of output signals corresponding to a plurality of channels within said frequency band (Whikehart et al. column 2, lines 56-61).

With respect to claims 35-36, 42 see above rejection of claims 6-7 and 4 above.

Claim 43 is rejected based on a rationale similar to the one used to reject claim 34 above, and with respect to the limitation said digital processor operable to extract information from said at least one of said channels and generate said at least one output, this limitation is disclosed by Whikehart et al. (column 2, lines 56-61, audio or data are extracted from the channels, and are output).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Whikehart so multiple users or multiple devices receive a plurality of audio or data (Whikehart et al. column 2, lines 56-61).

With respect to claims 46-49, 52, 57 claims 46-49, 52 are rejected based on a rationale similar to the one used to reject claim 43.

With respect to claim 53, claim 53 is rejected based on a rationale similar to the one used to reject claims 18 above.

With respect to claim 61, Rogers further discloses: wherein the navigation signals comprise aircraft navigation signals corresponding to broadcast signals in the range from about 108MHz to about 118 MHz (column 3, lines 47-49, navigational signal purpose range from 108MHz through 117.975MHz).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Rogers. so that it processes aviation type signals (NAV/COM) that are used by commercial aircrafts using a single A/D converter (Kaminski et al. column 12, lines 55-58, and the NAV/COM signals are of importance to aircrafts military and commercial, and increase the versatility of the receiver of Kaminski, without increasing hardware cost (the receiver of Kaminski uses a single A/D) column 3, lines 13-16)).

With respect to claim 62, Oczak discloses: wherein the navigation signals comprise aeronautical navigation signals corresponding to broadcast signals in the range from about 960MHz to about 1215MHz (slide 17, DME distance measuring equipment measures distance operating on frequencies from 962MHz to 1213MHz).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. so that it processes signals used by commercial aircrafts (distance measuring signals) using a single A/D converter (Kaminski et al. column 12, lines 55-58).

With respect to claim 63, Rogers further discloses: wherein the communication signals correspond to broadcast signals in the range from about 118MHz to about 137MHz (column 3, lines 50-52).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Rogers. so that it processes aviation type signals (NAV/COM) that are used by commercial aircrafts using a single A/D converter (Kaminski et al. column 12, lines 55-58, and the NAV/COM signals are of importance to aircrafts military and commercial, and increase the versatility of the receiver of Kaminski, without increasing hardware cost (the receiver of Kaminski uses a single A/D) column 3, lines 13-16)).

With respect to claim 65, Oczak discloses: wherein the glide slope signals correspond to broadcast signals in the range from about 328.6MHz to about 335.4MHz (slide 14, range of signals is between 329.15MHz through 335MHz).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. so that it processes signals used by commercial aircrafts (glide slope signals with altitude-director indication and/or horizontal situation indicator (slide 14 of Oczak)) using a single A/D converter (Kaminski et al. column 12, lines 55-58).

5. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al. (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 200, Whikehart et al.

(U.S. 7,200,377) as applied to claim 1 and further in view of Chelton "Series III Avionics Pilot's Guide", 2000.

With respect to claim 64, neither Kaminski et al. nor Rogers or Oczak or Whikehart et al. expressly disclose; wherein the automatic direction finder signals correspond to broadcast signals in the range from about 190kHz to about 2.3MHz.

In the same field of endeavor, the Chelton document discloses: automatic direction finder signals correspond to broadcast signals in the range from about 190kHz to about 2.3MHz (page 28 section DFS-43A, range 190-1860 KHz and 2182KHz the international marine distress frequency).

\At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the Chelton document, so that it processes low-frequency navigational aids and AM broadcast stations as well as signals on the international marine HF distress frequency)(page 28 of the Chelton document) using a single A/D converter (Kaminski et al. column 12, lines 55-58).

6. Claims 2-3, 14-15, 27, 44-45, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al., (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 2000, Whikehart et al. (U.S. 7,200,377) and further in view of Phillips et al. (U.S. 5,859,878).

With respect to claims 2, 3 the limitations of these claims are not expressly disclosed by neither Kamiski et al. nor Rogers or Oczak or Whikehart. In the same field of endeavor, wireless communications, Phillips et al., disclose: wherein said digital processing system generates a single output signal comprising a time-domain multiplexed serial data link multiplexed serial data link (see Fig. 8B, (coupled to the system of 8A) where a serial interface is used to supply signals to the computer, see column 7, lines 47-52, and see Fig. 6, shows TDM processing at the receiver, that results into TDM outputs). ; further comprising a controller coupled to said digital processing system, said controller operable to receive said time-domain multiplexed serial data link and generate a plurality of signals to a plurality of end devices (Fig. 12B, line transceiver and system bus, supplying serial data to plurality of end devices in computer, column 16, lines 14-17, uart (serial communication), and see column 15, lines 50-56).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al., based on the teachings of Phillips et. al., to achieve high-speed transfer of data (TDM serial data) and supply data to a plurality of external users (intercom).

Claims 44-45, 50-51 are rejected based on a rationale to the one used to reject claims 2-3.

With respect to claim 14, Whikehart et al. further discloses wherein said digital processor operable to extract information from said at least one of said

channels and generate said at least one output signal(column 2, lines 56-61, audio or data are extracted from the channels, and are output).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Whikehart so multiple users or multiple devices receive a plurality of audio or data (Whikehart et al. column 2, lines 56-61).

Neither Kaminski nor Rogers or Oczak or Whikehart disclose: according to configurable channel decoding parameters. In the same field of endeavor, Phillips discloses: wherein said digital signal processor extracts information from said at least one of said selected channels according to configurable channel decoding parameters (column 10, lines 49-58).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminksi et al based on the teachings of Phillips to process (decode) a variety of received signals using flexible-programmable processing functions (Phillips, column 10, lines 49-54)

With respect to claim 15, Kaminski does not expressly teach: wherein said configurable channel decoding parameters are software configurable.

In the same field of endeavor, Phillips discloses: wherein said configurable channel decoding parameters are software configurable (column 22, lines 61-67

column 23 lines 1-3 and column 11, lines 49-51, DPS executes a RAM program to perform signal processing/decoding).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminksi based on the teachings of Phillips to process (decode) a variety of received signals using flexible-programmable processing functions (Phillips, column 10, lines 49-54, column 11, lines 25-32).

Claim 27 is rejected based on a rationale similar to the one used to reject claim 15 above.

7. Claims 11-13, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al., (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 2000, Whikehart et al. (U.S. 7,200,377) and further in view of Bugeja et al. (U.S. 2002/0177446).

With respect to claim 11, Kaminski et al. further discloses: wherein said digital processing system further comprises a digital down converter operable to select said at least one of said channels within said frequency band, wherein said digital down converter selects said at least one of said channels according to a configurable channel selection parameter (column 5, lines 22-31, the tunable DDC);

Neither Kaminski et al. nor Rogers or Oczak or Whikehart et al. expressly disclose: configurable channel selection parameters.

In the same field of endeavor, Bugeja et al. discloses: a digital down converter selecting at least one of said channels according to configurable channel selection parameters (Fig. 1, blocks controller 30, Digital baseband and Mac Layer 22, [0032-0034], and Fig. 6 [0059-0060] see programmable center frequencies and bandwidths of programmable filters and programmable digital downconverters, 124a-124N, 126a- 126N)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. so that a bandwidth and frequency of a channel are programmable, resulting in a flexible (programmable) receiver system.

With respect to claims 12,13 Bugeja et al. further discloses: wherein said configurable channel selection parameters are software configurable; wherein said configurable channel selection parameters are selected from the following group: channel frequency, channel bandwidth, and combinations thereof. (Fig. 1, blocks controller 30, Digital baseband and Mac Layer 22, I[0032-0034, and Fig. 6 [0059-0060]see programmable center frequencies and bandwidths of programmable filters and programmable digital downconverters, 124a-124N, 126a-126N)

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. so that a

bandwidth and frequency of a channel are programmable, resulting in a flexible (programmable) receiver system.

Claim 26 is rejected based on a rationale similar to the one used to reject claim 12 above

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al., (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685) Oczak "Navigation and Communication Systems", Fall 2000, Whikehart et al. (U.S. 7,200,377), Phillips (U.S. 5,859,878) and further in view of Bugeja et al. (U.S. 2002/0177446) .

With respect to claim 16, the combination of Kaminski, Rogers, Oczak Whikehart, and Phillips further disclose: wherein said configurable channel decoding parameters are selected from the following group: channel frequency, channel modulation scheme, channel information format, and combinations thereof (Phillips column 10, lines 49-58).

Neither Kaminski, Rogers, Oczak ,Whikehart, or Phillips expressly teach: channel bandwidth.

In the same field of endeavor, Bugeja et al. further discloses: configurable channel decoding parameters are selected from: channel bandwidth (Fig. 1, blocks controller 30, Digital baseband and Mac Layer 22, ¶0032-0034, and Fig. 6 ¶0059-0060 see programmable bandwidths of programmable filters).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kaminski et al. based on the teachings of Bugeja et al. so that channel bandwidth is programmable, resulting in a flexible (programmable) receiver system.

9. Claims 38-40, 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminski et al., (U.S. 6,574,459) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 2000,Whikehart et al. (U.S. 7,200,377) Bugeja et al. (U.S. 2002/0177446) and further in view of Phillips (U.S. 5,859,878).

With respect to claims 38-40 these claims are rejected based on a rationale similar to the one used to reject claims 12, 15, 2-3 above.

10. Claims 18-19, 21-23, 27-31, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley (U.S. 5,870,402) in view of Rogers (U.S. 4,404,685), Oczak "Navigation and Communication Systems", Fall 2000, and Kelley et al. (U.S. 5,280,636).

With respect to claims 29-31, 33 Kelley discloses: a plurality of front-end circuits each of which comprises an antenna circuit operable to receive a plurality of radio signals (Fig. 2a, each of the front ends comprise antennas 14, amplifiers 16, filters 18 and each one of antennas 14a, 14b, 14c each one of them receives signals over the AM, FM and cellular, column 4, lines 5-8), and operable to

generate an analog signal simultaneously carrying a plurality of channels within said frequency band (the analog signals captured by antennas is understood to carry a plurality of channels, AM or FM radio or channels in the cellular range, see frequency ranges of capture column 3, lines 45-48); wherein at least one of said front-end circuits comprises a frequency mixing circuit operable to translate the received radio signals to a frequency band (Fig. 2a, mixers 25a-25c, column 4, lines 26-31); a plurality of analog to digital converters each of which is coupled to at least one of said front-end circuits, wherein each of said analog to digital converters is operable to convert said analog signal to a digital signal simultaneously carrying said plurality of channels within said frequency band (Fig. 2a, block 20 "ADC, column 4, lines 43-48, where 3 ADCs are used one for each service band, and even in digital form the plurality of channels are available, see column 5, lines 9-15); a digital processing system coupled to each of said analog to digital converter (Fig 2b, shows digital signal processing of the digital signals out of Fig. 2a, column 5, lines 9-14), said digital processing system operable to receive said digital signals from said analog to digital converters and substantially simultaneously generate from said digital signal a plurality of output signals (column 3, lines 49-53 see the obtaining simultaneous outputs and column 7, lines 13-16 corresponding to a plurality of said channels within said frequency band of at least one of said front-end circuits (column 6, lines 9-12, 44-57, the TDM digital signal including plurality of FM channels (stations) Fig. 2b shows three output signals (58c, 58b, 58a) FM stations (channels)), said digital processing system comprising: a digital down converter operable to select at

least one of said channels within said frequency band of at least one of said front-end circuits (function of blocks 42, 40, 38a-38c (comprising a digital down converter) , column 5, lines 54-65, column 6 lines 6-15, column 6, lines 60-63, where the signals out of mixer 42 are the selected channels (FM stations for example)) and a digital signal processor coupled to said digital down converter, said digital signal processor operable to extract information from said at least one of said channels and generate said at least one output signal (Fig 2b, blocks to the right of Demux 44, see column 6, lines 44-67, through column 7, lines 1-9, audio information is extracted from the FM stations).

Kelley does not expressly teach: by utilizing a plurality of aviation-specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation specific functions; an intermediate frequency mixing circuit operable; intermediate frequency band; and wherein the aviation-specific output signals comprise navigation signals, communication signals, automatic direction finder signals, and glide slope signals.

In the same field of endeavor (wireless communications), Rogers discloses: by utilizing a plurality of aviation specific modulation formats and which correspond to a plurality of aviation-specific radio channels and aviation-specific functions (column 3, lines, 25-57, see NAV/COM aircraft band signals, and allocation of channels, and it is understood that the NAV/COM signals have specific modulation formats).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kelley based on the teachings of Rogers so that it processes aviation type signals (NAV/COM) that are used by commercial aircrafts, by providing simultaneous processing at multiple frequencies, and with a capability for multiple users to simultaneously obtain outputs so as to increase the versatility of the receiver (Kelley column 3, lines 49-53, see also summary of the invention and column 3, lines 39-48).

In the same field of endeavor, Oczak disclose: wherein aviation-specific output signals comprise communication signals, navigation signals, automatic direction finder signals, and glide slope signals (slides 3 communication signals, slide 8 listing navigation signals including ADF (automatic direction finder, slide 11) and GS (glide slope, slide 14)).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the system of Kelley and Rogers based on Oczak so that signals used by aircrafts are output by the multi-band receiver of Kelley.

In the same field of endeavor, Kelley (636) discloses: at least one front-end circuit comprises an intermediate frequency mixing circuit operable to translate the received radio signals to an intermediate frequency band (column 2, lines 51-59, column 4, lines 49-56, 65-68, column 5, lines 1-3).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Kelley (402) and Rogers, based on Kelley (636)

to reduce system requirements (by using the "bandfolding" technique Kelley 402, column 4, lines 53-56).

Claim 18 is rejected based on a rationale similar to the one used to reject claim 29 above, (where a circuit group comprises two of the radio reception branches of Fig2a)

Claims 19, 21-23 are rejected based on a rationale similar to the one used to reject claims 2-31 above.

With respect to claim 27, see that Kelley discloses: wherein said digital signal processor extracts said information from said at least one of said selected channels according to software configurable decoding parameters (Kelly column 6, lines 46-53).

With respect to claim 28, neither Kelley (402) nor Rogers expressly teach: comprising a plurality of front-end circuit groups and a plurality of corresponding analog to digital converters (Kelly (402) only shows one front end circuit group (with two rf reception branches and 2 corresponding ADCs, one for each rf branch), wherein said digital processing system is operable to receive a plurality of digital signals from said analog to digital converters and generate at least one output signal corresponding to at least one of said channels within said frequency band of at least one of said front-end circuits of at least one of said font end circuit groups.

In the same field of endeavor, Kelley (636) discloses: comprising a plurality of front-end circuit groups (Fig. 1 , antenna 4, column 3, lines 55-67, column 4, lines 1-2, the case where receiving antennas for multiple services are used, and considered in pairs comprise front-end circuit groups).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art o modify the system of Kelley and Rogers based on the teachings of Kelley (636) so that a plurality of different types of services, including AM, FM, cellular, military communications, are simultaneously processed by the receiver of Kelley (403)(Kelley (402) column 3, lines 64-67 and Kelley (636) column 3, lines 49-53).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is (571)272-5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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